

CLAIMS

1. An apparatus, comprising:
a processor for receiving an acknowledgement command and a rate control command and generating a combined command therefrom.
2. The apparatus of claim 1, further comprising a constellation comprising a plurality of points, each point represented by two or more coordinate values, each point associated with an acknowledgment command and a rate control command, and wherein the combined command is generated as the two or more coordinate values associated with the received acknowledgment command and rate control command.
3. The apparatus of claim 1, further comprising a transmitter for transmitting a signal generated from the combined command.
4. The apparatus of claim 3, wherein the signal is a Quadrature Amplitude Modulated (QAM) signal.
5. The apparatus of claim 3, wherein the two or more coordinate values of each combined command are transmitted on the signal in time division multiplexed format.
6. The apparatus of claim 3, wherein the two or more coordinate values of each combined command are transmitted using a combination of QAM modulation and time division multiplexing.
7. The apparatus of claim 3, wherein the two or more coordinate values of each combined command are transmitted on two or more signals.
8. The apparatus of claim 1, further comprising:
a receiver for receiving a transmitted packet; and
a decoder for decoding the received packet, determining if the received packet was received correctly, and generating the acknowledgment command accordingly.

9. The apparatus of claim 8, wherein the acknowledgment command indicates the received packet is acknowledged when decoded correctly and not acknowledged otherwise.

10. The apparatus of claim 1, further comprising:

a scheduler for allocating a portion of a shared resource to zero or more requesting remote stations in response to a plurality of access requests, the allocation comprising zero or more individual access grants to zero or more requesting remote stations, zero or more common access grants to the remaining requesting remote stations, and generating the rate control command according to the allocation; and

wherein the receiver receives the plurality of access requests for transmission on the shared resource from the respective plurality of remote stations.

11. The apparatus of claim 1, wherein the rate control command indicates hold, increase, decrease, or stop.

12. The apparatus of claim 2, wherein a first subset of the plurality of points in the constellation are associated with a positive acknowledgement and a second subset of the points in the constellation are associated with a negative acknowledgment, and the minimum distance between any point in the first subset and any point in the second subset is greater than minimum distance between any two points in the first subset or any two points in the second subset.

13. The apparatus of claim 3, wherein the transmitter transmits a signal generated from the combined rate control command directed to a remote station, and a second signal comprising a common rate control command to a plurality of remote stations.

14. The apparatus of claim 13, wherein the transmitter transmits a command directed to a remote station indicating the remote station should monitor the second signal.

15. The apparatus of claim 14, wherein the command directed to the remote station indicating the remote station should monitor the second signal is a combined command

associated with a positive acknowledgement command and a stop rate control command.

16. An apparatus, comprising
a processor for receiving a combined command, and generating an acknowledgment command and a rate control command therefrom.
17. The apparatus of claim 16, further comprising a constellation comprising a plurality of points, each point represented by two or more coordinate values, each point associated with an acknowledgment command and a rate control command, and wherein the two or more coordinate values are determined from the combined command to determine the acknowledgment command and rate control command.
18. The apparatus of claim 16, further comprising a receiver for receiving a signal comprising the combined command.
19. The apparatus of claim 16, further comprising a transmitter for:
transmitting a subpacket at a transmission rate, the transmission rate adjusted in accordance with the rate control command; and
retransmitting a subpacket in accordance with the acknowledgement command.
20. The apparatus of claim 18, wherein the receiver further receives a common rate control signal comprising a common rate control command.
21. The apparatus of claim 20, wherein the processor selects the rate control command in a first mode or the common rate control command in a second mode.
22. The apparatus of claim 21, wherein a combined command indicating acknowledge and stop indicates a transmission from the first mode to the second mode.
23. The apparatus of claim 22, wherein a received grant command indicates a transition from the second mode to the first mode.

24. An apparatus, comprising:
a receiver for receiving a first rate control channel and a second rate control channel; and
a processor for determining a rate control command from the first rate control channel in a first mode and a second rate control channel in a second mode.
25. A method for acknowledgment and rate control, comprising:
receiving an acknowledgement command and rate control command; and
generating a combined command therefrom.
26. The method of claim 25, further comprising transmitting a signal generated from the combined command.
27. The method of claim 25, wherein the generating comprises:
selecting a point on a constellation comprising a plurality of points, each point represented by two or more coordinate values, each point associated with an acknowledgment command and a rate control command, the combined command generated as the two or more coordinate values associated with the received acknowledgment command and rate control command.
28. The method of claim 26, wherein the signal is a QAM signal.
29. The method of claim 25, further comprising:
receiving a transmitted packet;
decoding the received packet to determine if the received packet was received correctly; and
generating the acknowledgement command accordingly.
30. The method of claim 25, further comprising:
allocating a portion of a shared resource to one or more remote stations; and
generating the rate control command according to the allocation.

31. The method of claim 26, further comprising transmitting a common rate control signal to a plurality of remote stations.
32. A method of transmission, comprising:
receiving a combined command; and
generating an acknowledgment command and a rate control command therefrom.
33. The method of claim 32, further comprising:
transmitting a subpacket at a transmission rate, the transmission rate adjusted in accordance with the rate control command.
34. A method for rate control, comprising:
receiving a first rate control signal in a first mode;
receiving a second rate control signal in a second mode;
adjusting a transmission rate in accordance with the first rate control signal in the first mode and in accordance with the second rate control signal in the second mode.
35. A device, comprising:
means for receiving an acknowledgement command and a rate control command;
and means for generating a combined command therefrom.
36. A device, comprising:
means for receiving a combined command; and
means for generating an acknowledgment command and a rate control command therefrom.
37. A device, comprising:
means for receiving a first rate control signal in a first mode;
means for receiving a second rate control signal in a second mode;

means for adjusting a transmission rate in accordance with the first rate control signal in the first mode and in accordance with the second rate control signal in the second mode.

38. A wireless communication system, comprising:

means for receiving an acknowledgement command and a rate control command;

and means for generating a combined command therefrom.

39. A wireless communication system, comprising:

means for receiving a combined command; and

means for generating an acknowledgment command and a rate control command therefrom.

40. A wireless communication system, comprising:

means for receiving a first rate control signal in a first mode;

means for receiving a second rate control signal in a second mode;

means for adjusting a transmission rate in accordance with the first rate control signal in the first mode and in accordance with the second rate control signal in the second mode.

41. Computer readable media operable to perform the following steps:

receiving an acknowledgement command and rate control command; and

generating a combined command therefrom.

42. Computer readable media operable to perform the following steps:

receiving a combined command; and

generating an acknowledgment command and a rate control command therefrom.

43. Computer readable media operable to perform the following steps:

receiving a first rate control signal in a first mode;

receiving a second rate control signal in a second mode;

adjusting a transmission rate in accordance with the first rate control signal in the first mode and in accordance with the second rate control signal in the second mode.